

What is claimed is:

1. A method for authenticating the recording of digital video signals onto a fresh unrecorded disk by a disk recorder of a disk feeder system including coding generating and mixing means and a code imprinter, the method comprising the steps of:

feeding said fresh disk from a fresh disk compartment of said disk feeder system to said disk recorder through said code imprinter;

generating an exclusive code for each said fresh disk fed to said disk recorder and imprinting said exclusive code onto a surface of said fresh disk such that an imprinted disk is fed to said disk recorder; and

generating coded signals commensurating with said exclusive code and mixing said coded signals with said digital video signals recorded by said disk recorder, thereby authenticating said recording of the recorded disk outputted from said disk feeder system.

2. The method according to claim 1, adapted for authenticating the reading back of said digital video signals recorded from the recorded disk, wherein said disk recorder further includes readback means and said disk feeder system further includes a code reader, a code signal extractor and a comparator, said method further comprising the steps of:

loading said recorded disk into said fresh disk compartment for feeding said recorded disk to said disk recorder through said code reader for reading said exclusive code from the surface of said recorded disk and reading back said video digital signals through said readback means; and

extracting said coded signals through said code extractor and

comparing said reading of said exclusive code with said extracted coded signals and outputting authentication signals when said exclusive code and said coded signals commensurate.

5        3.            A method for authenticating the recording of digital video signals onto a coded disk by a disk recorder of a disk feeder system including a code reader and a code generating and mixing means wherein said coded disk includes an exclusive code imprinted onto its surface, the method comprising the steps  
10 of:

feeding said coded disk from a fresh disk compartment of said disk feeder system to said disk recorder through said code reader;

15 reading said exclusive code of said coded disk fed to said disk recorder; and

generating coded signals commensurating with said exclusive code and mixing said coded signals with said digital video signals recorded by said disk recorder, thereby authenticating said recording of the recorded disk outputted from said disk  
20 feeder system.

4.            The method according to claim 3, adapted for authenticating the reading back of said video digital signals recorded from the recorded disk, wherein said disk recorder  
25 further includes readback means and said disk feeder system further includes a code signal extractor and a comparator, the method further comprising the steps of:

loading said recorded disk into said fresh disk compartment for feeding said recorded disk to said disk recorder through  
30 said code reader for reading said exclusive code from the surface of said recorded disk and reading back said video digital signals through said readback means; and

extracting said coded signals through said code extractor and comparing said reading of said exclusive code with said extracted coded signals and outputting authentication signals when said exclusive code and said coded signals commensurate.

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5. The method for authenticating the recording of digital video signals according to claim 1, wherein said fresh disk is at least one of a non-erasable disk and a re-recordable disk.

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6. The method for authenticating the recording of digital video signals according to claim 3, wherein said coded disk is at least one of a non-erasable disk and a re-recordable disk.

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7. The method for authenticating the recording of digital video signals according to claim 1, wherein said code imprinter is selected from the group consisting of a laser printer, an ink jet printer, a heat stamp printer, an ink pad printer, an optical/chemical printer, a ribbon printer and a rubber pad printer.

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8. The method for authenticating the recording of digital video signals according to claim 1, wherein said code imprinter further includes a label applicator for attaching exclusively coded labels onto said surface of said fresh disk.

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9. The method for authenticating the recording of digital video signal according to claim 3, wherein said exclusive code is imprinted onto a label attached to said surface of said coded disk.

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10. A disk feeder apparatus for recording and authenticating digital video signals, comprising:

a controller including a coding generating and mixing means for generating an exclusive code for each fresh disk and code signals commensurating with said exclusive code for mixing said code signals with said digital video signals;

a fresh disk compartment for loading one or more said fresh disks;

a disk recorder means comprising a disk driver, a recording head, a reciprocal up-down arm, a sliding table, and a pull slider for collecting and transporting an imprinted fresh disk to said disk driver and to said recording head for recording said digital video signals mixed with said code signals onto said imprinted fresh disk;

an imprinting means comprising an imprinting head supported by said reciprocal up-down arm, for imprinting said exclusive code onto the surface of said fresh disk and for propelling said imprinted fresh disk away from said pull slider into said sliding table;

said pull slider pulling and transporting said fresh disk from said fresh disk compartment into said imprinting means;

a collection compartment for collecting the recorded disks; wherein

said sliding table transports back said recorded disk for ejection and said propelled imprinted disk ejects said recorded disk away from said sliding table into said collection compartment.

11. The disk feeder apparatus according to claim 10, and adapted for authenticating the readback of video digital signals read from said recorded disk, wherein:

said imprinting head further includes a code reader for

reading said exclusive code imprinted onto said surface of said recorded disk;

said disk recorder further includes a readout head for reading recorded signals from said recorded disk; and

5       said controller further includes an extracting means for extracting said code signals from said readout head and said exclusive code from said code reader, and a comparing means for comparing said extracted code signals and said exclusive code for outputting an authentication signal when said code signals  
10       and said exclusive code commensurate.

12.       A disk feeder apparatus for recording and authenticating digital video signals, comprising:

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15       a controller including a coding generating and mixing means for generating code signals commensurating with an exclusive code imprinted on a surface of a coded disk for mixing said code signals with said digital video signals;

      a fresh disk compartment for loading one or more said coded disks;

20       a disk recorder means comprising a disk driver, a recording head and a sliding table for collecting and transporting said coded disk to said disk driver and to said recording head for recording said digital video signals mixed with said code signals onto said coded disk;

25       an imprinting means comprising a pull slider, a code reader supported by a reciprocal up-down arm for reading said exclusive code from the surface of said fresh disk and for propelling said coded disk away from said pull slider into said sliding table;

      said pull slider pulling and transporting said coded disk  
30       from said fresh disk compartment into said imprinting means; and

      a collection compartment for collecting the recorded disks; wherein

said sliding table transports back said recorded disk for ejection and said propelled coded disk ejects said recorded disk away from said sliding table into said collection compartment.

5        13.        The disk feeder apparatus according to claim 10, adapted for authenticating the readback of video digital signals read from said recorded disk, wherein

said disk recorder further includes a readout head for reading recorded signals from said recorded disk; and

10        said controller further includes an extracting means for extracting said code signals from said readout head and said exclusive code from said code reader and a comparing means for comparing said extracted code signals and said exclusive code for outputting an authentication signal when said code signals and said exclusive code commensurate.

15        14.        The disk feeder apparatus according to claim 10, wherein said fresh disk is one of a non-erasable disk and a re-recordable disk.

20        15.        The disk feeder apparatus according to claim 12, wherein said coded disk is one of a non-erasable disk and a re-recordable disk.

25        16.        The disk feeder apparatus according to claim 10, wherein said code imprinter is selected from the group consisting of a laser printer, an ink jet printer, a heat stamp printer, an ink pad printer, an optical/chemical printer, a ribbon printer and a rubber pad printer.

30        17.        The disk feeder apparatus according to claim 10, wherein said code imprinter further comprises a label applicator

for attaching an exclusively coded labels onto said surface of said fresh disk.

18. The disk feeder apparatus according to claim 12,  
5 wherein said exclusive code is imprinted onto a label attached to said surface.

19. The disk feeder apparatus according to claim 10,  
wherein the imprint side of said fresh disk is provided with one  
10 of a soft layer and a rim.

20. The disk feeder apparatus according to claim 12,  
wherein the coded side of said coded disk is provided with one  
of a soft imprint layer and a rim.

21. The disk feeder apparatus according to claim 18,  
wherein said label comprises one of soft portions and a rim.

22. The disk feeder apparatus according to claim 10,  
wherein said sliding table and said pull slider are combined  
into one piece.

23. The disk feeder apparatus according to claim 12  
wherein said sliding table and said pull slider are combined  
25 into one piece.

24. A disk feeder apparatus for recording and authenticating digital video signals, comprising:

a controller including a coding generating and mixing means  
30 for generating an exclusive code for each fresh disk and code signals commensurating with said exclusive code for mixing said code signals with said digital video signals;

a pull lever;

a fresh disk tray for receiving said fresh disk and including one or more cutouts, and one of notches and projections for engagement by said pull lever;

5 a fresh disk tray compartment for loading one or more fresh disk trays and including an elevating platform for raising or lowering said fresh disk tray into a feeding position;

an imprinting means including a reciprocally movable arm moving in up-down directions, an imprinting head supported by  
10 said movable arm, for imprinting said exclusive code onto a surface of said fresh disk enclosed in said fresh disk tray in said feeding position;

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15 a disk recorder means including a disk driver, a recording head, and a pulling table including said pull lever for engaging and transporting said fresh disk tray with an imprinted fresh disk from said feeding position to said disk driver and to said recording head for recording said digital video signals mixed with said code signals onto said imprinted fresh disk;

20 a disk collection compartment for collecting recorded disks contained in trays receiving said recorded disks and including a disk collection elevating platform which is raised or lowered along with collected trays containing said recorded disks to a receiving position for receiving a subsequent tray containing recorded disks, wherein

25 said tray containing recorded disks is pushed onto said receiving position by said fresh disk tray, or by an additional pull lever included in said pulling table during a disk tray transporting operation.

30 25. The disk feeder apparatus according to claim 24, and adapted for authenticating a readback of video digital signals read from a corresponding recorded disk, wherein:



said imprinting head further includes a code reader for reading said exclusive code imprinted onto said surface of said recorded disk;

5 said disk recorder further includes a readout head for reading recorded signals from said recorded disk; and

said controller further includes an extracting means for extracting said code signals from said readout head and said exclusive code from said code reader, and a comparing means for comparing said extracted code signals and said exclusive code  
10 for outputting an authentication signal when said code signals and said exclusive code commensurate.

26. A disk feeder apparatus for recording and authenticating digital video signals, comprising:

15 a controller including a coding generating and mixing means for generating code signals commensurating with an exclusive code imprinted on the surface of a coded disk for mixing said code signals with said digital video signals;

a pull lever;

20 a fresh disk tray for receiving said coded disk and comprising one or more cutouts, and one of notches and projections for engagement by said pull lever;

a fresh disk tray compartment for loading one or more said fresh disk trays and including an elevating platform for raising  
25 or lowering said fresh disk tray into a feeding position;

a disk recorder means including a disk driver, a recording head, a code reader for reading said exclusive code from the surface of said coded disk and a pulling table including said pull lever for engaging and transporting said fresh disk tray  
30 with a coded disk from said feeding position to said disk driver and to said recording head for recording said digital video signals mixed with said code signals onto said coded disk;

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a disk collection compartment for collecting recorded disks  
contained in trays receiving said recorder disks and including a  
disk collection elevating platform which is raised or lowered  
along with collected trays containing said recorded disks to a  
5 receiving position for receiving a subsequent tray containing  
recorded disks, wherein

said disk trays containing recorded disks are pushed onto  
said receiving position by said fresh disk trays, or by an  
additional pull lever included in said pulling table during a  
10 disk-tray transportating operation.

27. The disk feeder apparatus according to claim 26,  
adapted for authenticating the readback of video digital signals  
read from a corresponding recorded disk, wherein

15 said disk recorder further includes a readout head for  
reading recorded signals from said recorded disk; and

said controller further includes an extracting means for  
extracting said code signals from said readout head and said  
exclusive code from said code reader and a comparing means for  
20 comparing said extracted code signals and said exclusive code  
for outputting an authentication signal when said code signals  
and said exclusive code commensurate.

28. The disk feeder apparatus according to claim 24,  
25 wherein said fresh disk is one of a non-erasable and a re-  
recordable.

29. The disk feeder apparatus according to claim 26,  
wherein said coded disk is one of a non-erasable and a re-  
30 recordable.

30. The disk feeder apparatus according to claim 24,

wherein said code imprinter is selected from the group consisting of a laser printer, an ink jet printer, a heat stamp printer, an ink pad printer, an optical/chemical printer, a ribbon printer and rubber pad printer.

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31. The disk feeder apparatus to claim 24, wherein said code imprinter further comprises a label applicator for attaching exclusively coded labels onto said surface of said fresh disk.

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32. The disk feeder apparatus according to claim 26, wherein said exclusive code is imprinted onto a label attached to said surface.

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33. The disk feeder apparatus according to claim 24, wherein said pull lever is selected from the group consisting of a self-propelled lever, a spring propelled lever, a motor-activated lever and an electrical plunger-activated lever.

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34. The disk feeder apparatus according to claim 26, wherein said pull lever is selected from the group consisting of a self-propelled lever, a spring propelled lever, a motor-activated lever and an electrical plunger-activated lever.

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35. The disk feeder apparatus according to claim 24, wherein said elevating platform includes an elevating mechanism selected from the group consisting of gear assemblies with gear racks, timing belts with timing gears and threaded shafts with mating threaded sockets.

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36. The disk feeder apparatus according to claim 26, wherein said elevating platform includes an elevating mechanism

selected from the group consisting of gear assemblies with gear racks, timing belts with timing gears and threaded shafts with mating threaded sockets.

5        37.        The disk feeder apparatus according to claim 24, wherein said disk recorder means includes at least two disk recorders, vertically stacked and mounted on top of said elevating platform, each of said disk recorders including a disk driver and a recording head, and wherein

10        said elevating platform raises or lowers said disk recorders for aligning each of said disk recorders with said feeding position and said receiving position during said disk tray transporting operation.

15        38.        The disk feeder apparatus according to claim 25, wherein said disk recorder means includes at least two disk recorders, vertically stacked and mounted on top of an elevating platform, each of said disk recorders including a disk driver and a recording head, and wherein

20        said elevating platform raises or lowers said disk recorders for aligning each of said disk recorders with said feeding position and said receiving position during said disk tray transporting operation.

25        39.        The disk feeder apparatus according to claim 26, wherein said disk recorder means includes at least two disk recorders, vertically stacked and mounted on top of an elevating platform, each of said disk recorders including a disk driver and a recording head, and wherein

30        said elevating platform raises or lowers said disk recorders for aligning each of said disk recorders with said feeding position and said receiving position during said disk tray

transporting operation.

40. The disk feeder apparatus according to claim 27, wherein said disk recorder means includes at least two disk recorders, vertically stacked and mounted on top of an elevating platform, each of said disk recorders comprises a disk driver and a recording head, and wherein

said elevating platform raises or lowers said disk recorders for aligning each of said disk recorders with said feeding position and said receiving position during said disk tray transporting.

41. A disk feeder apparatus for recording and readback of digital video signals, comprising:

a pull lever;

a fresh disk tray for receiving and enclosing a fresh disk or a recorded disk and including one or more cutouts, and one of notches and projections for engagement by said pull lever;

a fresh disk tray compartment for loading one or more said fresh disk trays and including an elevating platform for raising or lowering a fresh disk tray into a feeding position;

a disk recorder means including a disk driver, a recording and readback head, a controller, and a pulling table including said pull lever for engaging and transporting said fresh disk tray from said feeding position to said disk driver and to said recording and readback head for recording said digital signals onto said fresh disk, or for reading back said digital signals from said recorded disk;

a disk collection compartment for collecting recorded disks enclosed in trays containing said recorded disks and including a disk collection elevating platform which is raised and lowered along with collected trays containing recorded disks to a

receiving position for receiving a subsequent tray containing recorded disks, wherein

said tray containing recorded disks is pushed onto said receiving position by said fresh disk tray, or by an additional pull lever included in said pulling table during a disk-tray transporting operation.

42. The disk feeder apparatus according to claim 41, wherein said fresh disk is one of a non-erasable and a re-recordable.

43. The disk feeder apparatus according to claim 41, wherein said pull lever is selected from the group consisting of a self-propelled lever, a spring-propelled lever, a motor-activated lever and an electrical plunger-activated lever.

44. The disk feeder apparatus according to claim 41, wherein said elevating platform includes an elevating mechanism selected from the group consisting of gear assemblies with gear racks, timing belts with timing gears and threaded shafts with mating threaded sockets.

45. The disk feeder apparatus according to claim 41, wherein said disk recorder means includes at least two disk recorders, vertically stacked and mounted on top of an elevating platform, each of said disk recorders comprises a disk driver, a recording head and readback head, and wherein

said elevating platform raises or lowers said disk recorders for aligning each of said disk recorders with said feeding position and said receiving position during said disk-tray transportating operation.